

**REMARKS**

In response to the Office Action of January 12, 2007, applicants have amended the claims, which when considered with the following remarks, is deemed to place the present application in condition for allowance. Favorable consideration and allowance of all pending claims is respectfully requested. The amendments to the claims have been made in the interest of expediting prosecution of this case. Applicants reserve the right to prosecute the same or similar subject matter in this or another application.

Claims 1-35 are pending in this application. By this Amendment, Claim 21 has been amended to further define the invention by reciting a method for improving the soot dispersancy in the crankcase lubricating oil during engine operation of a diesel engine. Support for this amendment can be found throughout the specification, e.g., page 3, lines 20-24, page 5, lines 8-13, and page 16, lines 2-4. Applicants respectfully submit that no new matter has been added to this application. Moreover, it is believed that the claims as presented herein place the application in condition for allowance.

The Examiner has rejected Claims 1-15, 18 and 21-33 under 35 U.S.C. §103(a), as being unpatentable over Nalesnik U.S. Patent No. 4,919,683 ("Nalesnik").

As acknowledged by the Examiner nowhere does Nalesnik disclose or suggest "a diesel fuel composition comprising an effective amount of soot dispersant additive which is a copolymer of ethylene and a C<sub>3</sub> - C<sub>10</sub> alpha-monoolefin having a number average molecular weight ranging from about 5,500 to about 60,000 on which has been grafted an ethylenically unsaturated carboxylic acid and/or anhydride thereof in the ratio of at least about 1.8 molecules

of carboxylic acid functions per molecule of said copolymer which is then further derivatized with at least one amino-aromatic polyamine compound” as presently recited in Claim 1.

In order to establish a *prima facie* case of obvious the Examiner states “Nalesnik differs from the claims in that he does not specifically teach a ratio of about 1.8 molecules of carboxylic acid functions per molecule of the copolymer. However, it would have been obvious to one of ordinary skill in the art to optimize the results and arrive at this ratio because Nalesnik teaches in the preparation of the compound that 1-50 wt. % of the copolymer is used when the carboxylic acid function is grafted onto the copolymer. As to optimization results, a patent will not be granted based upon the optimization of result effective variables when the optimization is obtained through routine experimentation unless there is a showing of unexpected results which properly rebuts the *prima facie* case of obviousness.”

However, it is well established that "obvious to try" has long been held not to constitute obviousness. *In re O'Farrell*, 853 F.2d 894, 903, 7 USPQ2d 1673, 1680-81 (Fed. Cir. 1988). Nalesnik simply discloses that the ethylenically unsaturated carboxylic acid material may be grafted onto the polymer backbone in a number of ways and goes on to state free-radical induced grafting of ethylenically unsaturated carboxylic acid materials in a solvent containing, e.g., 1 to 50, preferably 5 to 30 wt. % based on the initial total oil solution, of the ethylene polymer can be used. Nothing in Nalesnik would lead one skilled in art to modify the grafted copolymer disclosed therein and arrive at the claimed soot dispersant additive which is a copolymer of ethylene and a C<sub>3</sub> - C<sub>10</sub> alpha-monoolefin having a number average molecular weight ranging from about 5,500 to about 60,000 on which has been grafted an ethylenically unsaturated carboxylic acid and/or anhydride thereof in the ratio of at least about 1.8 molecules of carboxylic

acid functions per molecule of said copolymer which is then further derivatized with at least one amino-aromatic polyamine compound. Only by using Applicants disclosure as a guide has the Examiner been able to piece together the claimed invention. Accordingly, Claims 1-20 are believed to be patentable over Nalesnik.

With respect to amended Claim 21, nowhere does Nalesnik disclose or suggest a method for improving the soot dispersancy in the crankcase lubricating oil during engine operation of a diesel engine which comprises operating the diesel engine with a fuel composition comprising (a) a major amount of a diesel fuel and (b) an effective amount of the recited soot dispersant additive of amended Claim 21.

Rather, Nalesnik discloses a *storage stabilizing* additive which is an aromatic polyamine succinimide of a copolymer and maleic anhydride graft that provides a means of stabilizing efficiently a middle distillate, e.g., diesel fuels and heating oil, *in storage*. Nalesnik provides no suggestion, motivation or even a hint of a method for improving the soot dispersancy in the crankcase lubricating oil during engine operation of a diesel engine which comprises operating the diesel engine with a fuel composition comprising (a) a major amount of a diesel fuel and (b) an effective amount of the recited soot dispersant additive of amended Claim 21. As such, nothing in Nalesnik would lead one skilled in the art to look to the storage stabilizing additive that provides a means of stabilizing efficiently a middle distillate in storage disclosed therein and arrive at the presently claimed method for improving the soot dispersancy in the crankcase lubricating oil during engine operation of a diesel engine. Accordingly, amended Claims 21-35 are believed to be patentable over Nalesnik.

For the foregoing reasons, amended Claims 1-35 are believed to be non-obvious, and therefore patentable, over Nalesnik.

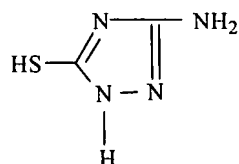
The Examiner has rejected Claims 16, 17, 19, 20, 34 and 35 under 35 U.S.C. §103(a), as being unpatentable over Nalesnik U.S. Patent No. 4,919,683 ("Nalesnik") and further in view of DeCanio U.S. Patent No. 5,925,151 ("DeCanio").

The foregoing deficiencies of Nalesnik discussed above with respect to the rejections of Claim 1, from which Claims 16, 17, 19 and 20 ultimately depend, and Claim 21, from which Claims 34 and 35 ultimately depend, apply with equal force to this rejection. DeCanio does not cure and is not cited as curing the above-noted deficiencies of Nalesnik. Rather, DeCanio is merely cited for the disclosure that a diesel fuel may be a low sulfur diesel fuel. In fact, even by combining Nalesnik with DeCanio, one skilled in the art would not even arrive at the presently claimed invention. Accordingly, Claims 16, 17, 19, 20, 34 and 35 are believed to be non-obvious, and therefore patentable, over Nalesnik and DeCanio, no matter how these references are considered.

The Examiner has rejected Claims 1-6, 9-14, 17-24, 27-30 and 32-35 under 35 U.S.C. §103(a), as being unpatentable over Esche U.S. Publication No. 2004/0014612 ("Esche").

Nowhere does Esche disclose or suggest a diesel fuel composition comprising an effective amount of soot dispersant additive which is a copolymer of ethylene and a  $C_3 - C_{10}$  alpha-monoolefin having a number average molecular weight ranging from about 5,500 to about 60,000 on which has been grafted an ethylenically unsaturated carboxylic acid and/or anhydride thereof in the ratio of at least about 1.8 molecules of carboxylic acid functions per molecule of

said copolymer which is then further derivatized with at least one amino-aromatic polyamine compound selected from ... aminomercaptotriazole of the formula:



as generally recited in Claim 1.

Rather, Esche discloses a hybridized, acylated olefin copolymer obtained from the reaction product of (a) an acylated olefin copolymer, and (b) a coupling compound wherein the coupling compound contains one or more amino, hydroxy and/or thiol group capable of reacting with the carboxylic group of the acylated olefin copolymer. Esche further discloses that suitable *polythiol amines* include aminomercaptotriazoles.

In the Office Action, the Examiner states that “Esche’s general teaching of aminomercaptotriazole suggests the claimed aminomercaptotriazole.” It is not seen where there is any appreciation in Esche of the aminomercaptotriazole having the specifically recited structure. In fact, a polythiol amine would contain more than one thiol group, which is completely different than the recited aminomercaptotriazole having the structure set forth in the claims. Moreover, as far as Esche is concerned, any *polythiol amines* such as an aminomercaptotriazole could be employed in the coupling reaction. Thus, the general disclosure of *polythiol amines* such as aminomercaptotriazoles can include a plurality of species within the genus of *polythiol amines*. If it is the Examiner’s position that one of ordinary skill in the art, upon inspection of Esche, would be motivated to use the specifically claimed aminomercaptotriazole, then the Examiner is respectfully requested to explain with reasons of

particularity why one skilled in the art would be motivated to choose the specifically claimed aminomercaptotriazole out of the numerous possible other aminomercaptotriazoles. As such, nothing in Esche would lead one skilled in the art to modify the reaction product of a hybridized, acylated olefin copolymer and coupling agent such as a polythiol amine disclosed therein and arrive at the claimed soot dispersant additive which is a copolymer of ethylene and a C<sub>3</sub> - C<sub>10</sub> alpha-monoolefin having a number average molecular weight ranging from about 5,500 to about 60,000 on which has been grafted an ethylenically unsaturated carboxylic acid and/or anhydride thereof in the ratio of at least about 1.8 molecules of carboxylic acid functions per molecule of said copolymer which is then further derivatized with at least one amino-aromatic polyamine compound selected from the specifically recited aminomercaptotriazole. Accordingly, Claim 1 is believed to be nonobvious and therefore patentable, over Esche.

With respect to amended Claim 21, nowhere does Esche disclose or suggest a method for improving the soot dispersancy in the crankcase lubricating oil during engine operation of a diesel engine which comprises operating the diesel engine with a fuel composition comprising (a) a major amount of a diesel fuel and (b) an effective amount of the recited soot dispersant additive of amended Claim 21.

Rather, Esche discloses a multi-functional fuel and lubricant additive that provides dispersancy properties as well as viscosity index improver credit and, improved fuel economy. Esche further discloses that the hybridized olefin copolymer products disclosed therein find their primary utility in lubricating oil compositions and goes on to state a method of improving the dispersancy of a lubricating oil by incorporating into the oil a dispersancy improving amount of the hybridized, acylated olefin copolymer. Esche, however, has no appreciation of a method for

improving the soot dispersancy in the crankcase lubricating oil during engine operation of a diesel engine which comprises operating the diesel engine with a fuel composition comprising (a) a major amount of a diesel fuel and (b) an effective amount of the recited soot dispersant additive of amended Claim 21.

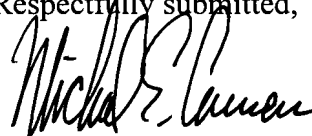
Instead, applicants have surprisingly that by adding the specifically recited soot dispersant additive directly to the diesel fuel, the soot dispersant additive is capable of passing intact into the diesel lubricant so as to continuously replenish dispersant additive as the latter is consumed during the normal course of engine operation. In past practice, lubricant additive formulations were designed to accept and manage certain amounts of soot, and when that capability was depleted, soot particle agglomeration may cause a sudden, significant viscosity increase, aggravate engine wear, handicap low temperature operation, form harmful sludge and result in a fuel economy penalty. Accordingly, a lubricant for use in the diesel engine would have to be continuously drained in order to remove the level of exhaust particulates that accumulated in the lubricant. This is nowhere suggested or appreciated in Esche. As such, nothing in Esche would lead one skilled in the art to look to the hybridized olefin copolymer reaction product that improves the dispersancy of a lubricating oil by incorporating directly into the oil a dispersancy improving amount of the hybridized, acylated olefin copolymer disclosed therein and arrive at the presently claimed method for improving the soot dispersancy in the crankcase lubricating oil during engine operation of a diesel engine by operating the diesel engine with a fuel composition containing (a) a major amount of a diesel fuel and (b) an effective amount of the recited soot dispersant additive. Accordingly, amended Claims 21-35 are believed to be patentable over Esche.

Appln. No. 10/779,423  
Amendment dated April 12, 2007  
Amendment to Office Action dated January 12, 2007

For the foregoing reasons, amended Claims 1-35 are believed to be non-obvious, and therefore patentable, over Esche.

For the foregoing reasons, amended Claims 1-35 as presented herein are believed to be in condition for allowance. Such early and favorable action is earnestly solicited.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Michael E. Carmen", written over the typed name.

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